I spent the first eleven years of my life in China, where I attended elementary school, before moving to the United States for the following nine years for middle school, high school, and now college. This move allowed me to experience two drastically different teaching, learning, and disciplinary styles. Even as an eleven-year-old, when I first stepped foot into an American school, I felt a distinction in my experience that was created by my past education from a separate country. Now, after nine years in the American education system, I still find myself using skills and tricks learned in elementary school from China. My multi-cultural educational experience has allowed me to think about problems from more than one perspective and appreciate the creative solutions that can come from students of different educational backgrounds. To continue this cross-cultural educational experience, I have chosen, as part of my college experience, to learn in a new environment that is almost opposite of that of Caltech.

As a student researcher, the benefit of working, and especially learning, with people from different backgrounds strongly manifests itself. I have met people from multiple different countries, including China, Korea, Iran, France, Switzerland, etc. With scientists from different cultures working together in the modern day, it has become increasingly more important for me to appreciate the unique perspectives of people from contrasting backgrounds. Often, I find myself relating to and understanding the mindsets of peers or colleagues from both Asian countries and America, which is an extremely comforting feeling. I wish to keep expanding from these positive multi-cultural experiences by continuously exposing myself to different teaching styles, allowing me to promote my personal growth.

Aside from my big move from China to the United States, I still cannot claim that the past twenty years of my life have been insulating. Since late high school years, I have attempted to explore a new region within or outside of the United States as frequently as I can. Seeing new parts of this world has become a favorite hobby. Every time I have traveled to a new location, I have made unforgettable memories and learned more about local traditions and history. These learning opportunities, especially about locals and cultures which would otherwise be out of my reach, have been great ways to expose myself to more pieces of the world, learn about the history of those destinations, and discover the problems around us from a new perspective.

While I have made lifelong friends here at Caltech, I do believe expanding my circle and challenging myself to meet new people of completely different backgrounds or interests can only be beneficial to my growth. I have gotten comfortable with the small community that is Caltech, but I can't wait to explore a large university, see unfamiliar faces on campus every single day, and make new friendships or connections during my time abroad.

Given my unique educational experience and my desire to travel and learn about other cultures, I have no doubt that a term abroad is the correct decision for me. Academically, while abroad, I will be able to fulfill some of my option requirements as well as take electives in topics that are not deeply explored at Caltech. I'm excited to challenge myself abroad by learning the material through more self-assessment and discussions, which is different than the teaching style at Caltech. With the benefits of a more flexible academic calendar and the promotion of self-growth through gaining more appreciation for people from different cultures, I am certain that a term abroad will be an exciting and valuable experience.

1. University of Edinburgh

I have chosen to apply to the University of Edinburgh not only because of its breathtaking location and attractive teaching style, but also because of its perfect fit with my academic track (Chemical Engineering option) at Caltech. University of Edinburgh allows me to fulfill two option requirements as well as an option elective and advanced social science credit. I will be able to fulfill both ChE118 (Introduction to Design of Chemical Systems) and Ch21b (Physical Chemistry) option requirements while abroad, given that the two courses do not conflict next fall term. If they do conflict, I will be able to take either course when I come back to Caltech the following winter term. The option elective I have chosen, "Biosensors", is a course I am most excited to take. I recently completed summer research in the biosensing topic and decided to continue exploring topics related to this electrochemical-electric engineering interface through my coursework. I am looking forward to taking a course that fits so well with my interest, and places more focus on the application of engineering, instead of the fundamentals of engineering. Because of the flexibility in scheduling, I will be able to take a social science course, "Mapping Health and Illness Across Societies" at the University of Edinburgh. Because of my interest in the health/medical industry, I'm excited to learn more about health and illness problems in the real world through a non-STEM perspective. University of Edinburgh offered classes that excited me the most, and created the least disruption to my current Caltech schedule, which is why I only chose to apply to this single university.

Course List for Edinburgh
Qianhe Liu, Class of 2020
Chemical Engineering/Caltech
Date: 1/25/2018

Total Edinburgh Credits: 60
Total CIT Units: 45
Course by Correspondence/Units: 0

1. **CHEM09008 Chemistry 3A (VS1)**
   College of Science and Engineering
   School of Chemistry
   Department of Chemistry
   SCQF Level 9
   Semester 1
   20 Edinburgh credits
   9 Caltech units
   Caltech evaluator: Professor Lu Wei
   ChE option credit
   CIT equivalent course: Ch21b

   Course description: Chemistry 3A consists of the following lecture courses under the theme of characterization of molecules, matter, and reactions: molecular symmetry and electronic structure; molecular spectroscopy; nuclear magnetic resonance spectroscopy; structure and bonding; X-ray crystallography.

2. **CHEE10005 Chemical Engineering Design: Synthesis and Economics**
   College of Science and Engineering
   School of Engineering
   Department of Chemical Engineering
   SCQF Level 10
   10 Edinburgh credits
   9 Caltech units
   Caltech evaluator: Dr. Mike Vivic
   ChE option credit
   CIT equivalent course: ChE118

   Course description: This course covers process design synthesis with heuristic and target-based methods presented for distillation and heat recovery systems, and process economics covering project economic analysis and principles for the allocation of investment between competing projects.

In the synthesis section, qualitiative and approximate quantitative synthesis are presented for multicomponent distillation systems, while the pinch design method for designing networks of heat exchangers is described.

The process economics section also describes how considerations of pollution, resource depletion and environmental impact can be introduced in economic analyses.

3. ELEE11094 Biosensors

College of Science and Engineering
School of Engineering
Department of Electronics Engineering
SCQF Level 11
10 Edinburgh credits
9 Caltech units
Caltech evaluator: Professor John Brady
ChE Elective credit
CIT equivalent course: N/A

Course description: This introductory course begins by defining the basic concept of a biosensor and what differentiates this from any other chemical sensor. Additional background reading is supplied providing information on basic concepts in chemistry, thermodynamics and cell biology. The course is taught through lectures and tutorials by two academics with research experience in this field. Students will be expected both to gain an understanding of the basic concepts of biosensing technology, and an appreciation of the state of the art and future directions.

4. SHSS08001 Mapping Health and Illness Across Societies

College of Humanities and Social Science
School of Health in Social Science
Department of School of Health in Social Science
SCQF Level 8
20 Edinburgh credits
9 Caltech units
Caltech evaluator: Professor Colin Camerer
Advanced Social Science Credit
CIT equivalent course: N/A

Course description: This course will introduce students to the social nature of health and illness, and to different models that inform aspects of our

understanding of health phenomena. The varying experience of social groups according to demographic and economic patterning will be viewed through a global perspective alongside the changing profile of health and illness.

The first four weeks will approach this through mapping occurrences of health and illness geographically on a global view, and through conceptual mapping to provide theoretical resources through which to begin to understand and explore what may underlie global variation. In the remaining 6 weeks social patterning of health and illness in contemporary society, and the experience of health inequalities and social exclusion will be explored with a focus on wealth/poverty, ethnicity, age, and gender.

The main sociological perspectives and theoretical approaches to the sociology of health and medicine will be introduced and students will gain understanding of differing explanatory frameworks.